**Nazwa przedmiotu:**

Ethical Aspects of Research and Engineering

**Koordynator przedmiotu:**

Roman Z. Morawski

**Status przedmiotu:**

Obowiązkowy

**Poziom kształcenia:**

Studia I stopnia

**Program:**

Computer Science

**Grupa przedmiotów:**

Non-Technical Electives

**Kod przedmiotu:**

EEARE

**Semestr nominalny:**

3 / rok ak. 2015/2016

**Liczba punktów ECTS:**

3

**Liczba godzin pracy studenta związanych z osiągnięciem efektów uczenia się:**

- lecture attendance: 15 x 2 h = 30 h;
- preparation to lectures (reviewing lecture notes, reading of recommended literature and listening to podcasts, completing facultative homework): 15 h;
- preparation to written class tests (including participation in consultations): 2 x 6 h. + 3 h = 15 h;
- preparation to animation of discussion (reviewing lecture notes, reading of recommended literature and listening to podcasts; design of animation scenario): 5 h.

Total: 30 + 15 + 15 + 5 = 65 h.

**Liczba punktów ECTS na zajęciach wymagających bezpośredniego udziału nauczycieli akademickich:**

1.5

**Język prowadzenia zajęć:**

angielski

**Liczba punktów ECTS, którą student uzyskuje w ramach zajęć o charakterze praktycznym:**

0.6

**Formy zajęć i ich wymiar w semestrze:**

|  |  |
| --- | --- |
| Wykład:  | 30h |
| Ćwiczenia:  | 0h |
| Laboratorium:  | 0h |
| Projekt:  | 0h |
| Lekcje komputerowe:  | 0h |

**Wymagania wstępne:**

Fluency in English

**Limit liczby studentów:**

30

**Cel przedmiotu:**

Objective: The course is focused on ethical aspects of activities characteristic of creative engineering. It is aimed at the development of intellectual skills necessary for consideration of ethical dilemmas related to research & development (R&D) activities, as well as at providing students with basic information of general ethics, ethical issues related to R&D activities, and the methodology of resolving ethical dilemmas related to such activities

**Treści kształcenia:**

Lecture contents:
Elements of meta-ethics and general ethics (4 h): the definition of basic concepts of ethics and meta-ethics; the historical development of ethics; the relation of ethics to other philosophical disciplines; the relation of ethics to law, religion and customs; the relation of ethics to psychology, sociology and other social sciences.
Methodological background of R&D ethics (2 h): the definitions of truth and their ethical consequences; the crisis of truth in the postmodern culture; the naïve concept of scientific method and its criticism; the epistemological status of mathematical modelling and measurement.
Ethical aspects of principal R&D activities (3 h): the choice of a research problem or of a design object; ethical aspects of the choice of an R&D methodology; ethical aspects of the design and execution of experiments and tests; ethical aspects of the acquisition and processing of data; the evolution of R&D ethics; an example of a R&D-related ethical dilemma.
Ethical aspects of information processes (5 h): the definition of an information process; ethical issues related to the scientific and/or technical discussion; ethical issues related to the publication of R&D results; ethical issues related to the reviewing process; ethical issues related to grant applications.
Protection of intellectual property – legal and ethical aspects (3 h): ethical issues related to legal protection of author's rights; ethical issues related to patenting; ethical arguments against legal protection of material rights.
Ethical aspects of using information technologies (ITs) (2 h): a classification of ethical issues related to IT usage; a basic approach of ethical problems related to IT usage; the netiquette or internet ethics and its relation to the journalists ethics; ethical dilemmas related to IT usage.
Complementary issues (1 h): ethical aspects of engineering practice; codes of professional ethics.

**Metody oceny:**

Evaluation of learning outcomes:
- evaluation of the results of written class tests (WCT1 and WCT2, 4 h) covering the whole lecture contents;
- evaluation of oral performance during class discussions animated by the students (CD1, CD2, CD3 and CD4, 6 h) covering the following issues: art and science of ethical discourse, ethical dilemmas related to principal R&D activities, ethical dilemmas related to data processing and publication, ethical dilemmas related to IT development and IP protection.
Notice: no written or audio-recorded documentation is generated for the latter form of evaluation. An attempt to produce it could be counterproductive since it would "kill" a real discussion; consequently, instead of learning the art of responsible discussion, the students would learn how to satisfy the needs of bureaucracy

**Egzamin:**

nie

**Literatura:**

[1] F. L. Macrina, "Scientific Record Keeping", [in] Scientific Integrity (Ed. F. L. Macrina), 3rd ed., ASM Press, Washington D.C. 2005.
[2] On Being a Scientist: Responsible Conduct in Research, Committee on Science, Engineering, and Public Policy (appointed by National Academy of Sciences, National Academy of Engineering, and Institute of Medicine), Washington D.C. 2009, http://www.nap.edu/catalog/12192.html [2010.05.12].
[3] A. E. Shamoo, D. B. Resnik, Responsible Conduct of Research, Oxford University Press, New York 2009.
[4] C. Whitbeck, Ethics in Engineering Practice and Research, Cambridge University Press, New York 1998.
[5] Recommeded readings (4–6 papers) and podcasts (4–6 hours of) different for each semester.

**Witryna www przedmiotu:**

https://studia.elka.pw.edu.pl

**Uwagi:**

## Efekty przedmiotowe

### Profil ogólnoakademicki - wiedza

**Efekt EEARE\_W01:**

Student, who passed the course, has basic knowledge concerning:  basic concepts of ethics and meta-ethics;  the historical development of ethics;  methodological background of R&D ethics;  ethical aspects of principal R&D activities.

Weryfikacja:

 evaluation of WCT1 results  evaluation of oral performance during CD1, …,CD4

**Powiązane efekty kierunkowe:** K\_W19

**Powiązane efekty obszarowe:** T1A\_W08

**Efekt EEARE\_W02:**

Student, who passed the course, has basic knowledge concerning:  ethical aspects of R&D-related information processes;.  ethical aspects of legal protection intellectual property;  ethical aspects of using information technologies in R&D practice;  ethical aspects of engineering practice.

Weryfikacja:

 evaluation of WCT2 results  evaluation of oral performance during CD1, …,CD4

**Powiązane efekty kierunkowe:** K\_W19, K\_W21

**Powiązane efekty obszarowe:** T1A\_W08, T1A\_W10

### Profil ogólnoakademicki - umiejętności

**Efekt EEARE\_U01:**

Student, who passed the course, is able to:  to identify and critically analyse ethical issues related to R&D activities;  to methodically approach ethical dilemmas related to R&D activities; to discuss ethical issues related to R&D activities and defend one’s own ethical stance.

Weryfikacja:

 evaluation of WCT1 and WCT2 results  evaluation of oral performance during CD1, …,CD4

**Powiązane efekty kierunkowe:** K\_U01, K\_U05, K\_U06

**Powiązane efekty obszarowe:** T1A\_U01, T1A\_U05, T1A\_U06

### Profil ogólnoakademicki - kompetencje społeczne

**Efekt EEARE\_K01:**

Student, who passed the course, is:  more sensitive to moral values related to R&D;  better prepared for undertaking the responsibility for R&D activities;  better prepared for resolving ethical dilemmas that appear in R&D practice;  more advanced in developing individual personal ethical stance with respect to R&D issues;  more inclined to continually reflect over ethical aspects of every-day activities.

Weryfikacja:

 evaluation of WCT1 and WCT2 results  evaluation of oral performance during CD1, …,CD4

**Powiązane efekty kierunkowe:** K\_K02, K\_K03, K\_K04

**Powiązane efekty obszarowe:** T1A\_K02, T1A\_K05, T1A\_K03, T1A\_K04